Technical Description and User Guide C3607w

USER GUIDE

MOBILE BROADBAND MODULE

BUILT-IN MOBILE BROADBAND FROM ERICSSON

Abstract

This document describes the Ericsson Mobile Broadband Module C3607w from a user perspective. End-user value, functionality, features and basic building blocks are described.

Trademark and Acknowledgements

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Android is the registered trademark of Google Inc.

Ericsson is a trademark of Telefonaktiebolaget LM Ericsson.

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Statements

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Radiofrequency radiation exposure information:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

NOTICE:

This device complies with Part 15 of the FCC Rules [and with RSS-210 of Industry Canada].
Operation is subject to the following two conditions:
 (1) this device may not cause harmful interference, and
 (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTICE:

Changes or modifications made to this equipment not expressly approved by (manufacturer name) may void the FCC authorization to operate this equipment.

Content

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1 About this Document

1.1 Purpose

This user guide gives the reader a deeper technical understanding of the features, applications and configuration of C3607w. A simplified technical explanation of GSM/GPRS/EDGE and WCDMA/HSPA data services is also included in this document.

1.2 Audience

People who can benefit from this document include:

- End-users

- Notebook vendors

- IT professionals

- Software developers

- Support engineers

- Business decision-makers

- Mobile operators

More information can be found on the World Wide Web at http://www.ericsson.com/mobilebroadbandmodules.

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2   Product Overview

Ericsson's C3607w is a high performance Mobile Broadband Module capable of providing wide area wireless data access at speeds up to 7.2 Mbps downlink and up to 5.76 Mbps uplink in a 192-lead LGA package. It offers both triple band WCDMA/HSPA and quad-band EDGE/GPRS/GSM mobile access to the internet or corporate networks worldwide with flexibility including "always online" capability. C3607w does not support voice calls.

C3607w uses USB as the main system interface for data and control communication. In addition, it is capable of providing a 26MHz system clock signal to be used by an external GPS receiver residing on the host platform.

2.1   Key features and benefits

- The C3607w Mobile Broadband Module is a self-contained 192-pin LGA component with radio, associated baseband plus memory and power management biased from only one voltage.

- The module is a dual mode device which offers quad-band EDGE/GPRS/GSM and triple-band WCDMA/HSPA with handover between the different technologies.

- The module has receiver diversity, GRAKE2 (equalization and RX diversity simultaneously) which enhances the radio link performance.

- The module supports clock synchronization for an external GPS chip set.

- The device has outstanding low current consumption in various host states and at different network connection usage.

- The C3607w is a true always connected device which supports wake on wireless.

- To ensure regulated radio performance and component life length the module has an in-built over temperature protection.

- The C3607w supports the Microsoft Windows XP, Windows Vista, Windows 7, Linux and Android operating systems.

3 C3607w Communication

The C3607w Mobile Broadband Module keeps end-users up to date by giving them the best available mobile service wherever they are.

C3607w is a dual mode device, able to connect via WCDMA/HSPA and GSM/GPRS/EDGE. The handover between the two systems and network technologies are automatically managed by the C3607w allowing the user to remain connected seamlessly.

The C3607w comes with tri-band WCDMA/HSPA (Band I, II, and V) and quad-band (850/900/1800/1900 MHz) GSM/GPRS/EDGE support.

3.1 Network Technologies

3.1.1 UMTS

3G (third-generation) services combine high-speed radio access with IP-based (Internet Protocol) services. This not only offers the possibility for fast mobile connection to the World Wide Web, but also a totally new way to communicate, access information, conduct business, learn and be entertained.

Compared to 2G mobile networks, 3G significantly boosts network capacity, a much needed feature in densely populated areas and allows operators to support more users and offer them more sophisticated services.

3.1.1.1 WCDMA

The initial implementation of UMTS networks enables Internet or corporate network access at bidirectional data rates of up to 384 kbps.

3.1.1.2 HSPA

HSPA (High Speed Packet Access) is available in all most UMTS markets. With its HSDPA solution, C3607w is capable of downlink-speeds of up to 7.2 Mbps. In addition, with its antenna diversity, the C3607w has a fast and reliable downlink. C3607w uses HSUPA which enables uplink speeds of up to 5.76 Mbps. With HSPA, users can enjoy faster download and upload capability while network operators benefit from increased capacity.

3.1.2 GSM

GSM/GPRS coverage is available almost everywhere, and provides a secure fall back so that network connection is maintained.

3.1.2.1 GPRS

GPRS is an enhancement to GSM networks and provides packet data transmission. The connection setup is fast and, once connected, applications may send and receive data whenever required.

C3607w can achieve communication speeds through GPRS up to a theoretical maximum of 85.6 kbps downlink and 42.8kbps uplink.

3.1.2.2 EDGE

EDGE (Enhanced Data rates for Global Evolution) is an integral part of the GSM family of open mobile standards. EDGE improves GPRS by increasing data throughput by a factor of three. GPRS networks enhanced with EDGE are often referred to as E-GPRS (Enhanced GPRS) networks.

C3607w can achieve communication speeds up to a theoretical maximum of 247.4 kbps downlink and 123.7 kbps uplink; MCS-9). Typical end-user speeds are in the range of 120 kbps under average conditions, with burst speeds around 200 kbps in strong signal conditions.

3.2 Applications

3.2.1 SMS

C3607w can send and receive text messages.

3.2.2 GPS

The C3607w does not have an onboard GPS receiver, but is prepared to support an external GPS receiver chipset mounted on the host system. The C3607w generates signals for GPS system clock and RF PA blanking.

3.2.3 Browsing and internet access

C3607w is aimed for hosts running Windows and GNU/Linux. The first Linux distribution supported is MeeGo. The drivers stack will be included in the GNU/Linux kernel for easy integration. Also Android drivers are provided.

4 Technical Specifications

4.1 General

Technical Data	
Product name	C3607w
Card type	192-lead LGA package
System	GSM 850 E-GSM 900 GSM 1800 GSM 1900 UMTS 850 UMTS 1900 UMTS 2100
Services Available	GSM: Packet-Switched data GPRS/EDGE, SMS UMTS: Packet-Switched data, HSPA, SMS Multiple Primary PDP Context Voice services are not supported
SIM Card	USIM, GPRS-aware and Regular (non-GPRS-aware) supported 3 V and 1.8 V type
Certification and Type Approval	CE, R&TTE, FCC, IC, GCF and PTCRB
Product Number	KRD 131 17/3
FCC ID	VV7-MBMC3607W2
IC ID	287AG-MBMC3607W

4.2 Exterior Description

Attribute	Data
Form factor	28.8x34.0x2.36 mm
Weight	<7 g

4.3 Environment

Attribute	Data
Ambient Temperature: Storage	-40℃ to 85℃
Directives	WEEE (Waste Electrical and Electronic Equipment Directive) RoHS (Restriction of use of certain Hazardous Substances)

4.4 Electrical Characteristics

Attribute	Data
Supported Voltage Range	3.2 V – 4.2 V
Nominal Operating Voltage	3.7 V
Average Standby Power (Radio off)	< 20 mW
Average Idle Power (Attached to network)	< 20 mW
Data Transfer Peak Average Power	< 2.8 W

4.5 Operating System Support

Attribute	Data
Supported Operating Systems	GNU/Linux (MeeGo), Android, Windows XP, Windows Vista, Windows 7

4.6 UMTS Technical Data

Attribute	Data		
Power Class	Class 3		
Frequency bands	Band V (850)	Band II (1900)	Band I (2100)
Frequency Range (MHz)	TX: 824-849 RX: 869-894	TX: 1850-1910 RX: 1930-1990	TX: 1920-1980 RX: 2110-2170
Duplex spacing	45 MHz	80 MHz	190 MHz
Advanced Receiver	Type I, Type II, Type III		
Maximum Downlink speed	384 kbps (Packet-Switched)		
Maximum Uplink speed	384 kbps (Packet-Switched)		
Features	Inter-RAT Handover (UMTS/EDGE/GPRS) Inter-RAT Reselection (UMTS/EDGE/GPRS)		
Quality Of Service	UMTS classes supported via AT Command		
Modes	PDP type IP		
IP Allocation	Dynamic		

4.7 HSPA Technical Data

Attribute	Data
Maximum Downlink Speed	7.2 Mbps
Maximum Uplink Speed	5.76 Mbps
HSDPA Categories	Categories up to 7.2 Mbps (Category 1-8)
HSUPA Categories	Categories up to 5.76 Mbps (Category 1, 3, 5, 6)

4.8 GSM Performance and Technical Characteristics

Parameter	GSM 850	E-GSM 900	GSM 1800	GSM 1900
Frequency range (MHz	TX: 824 – 849 RX: 869 – 894	TX: 880 – 915 RX: 925 – 960	TX: 1710 – 1785 RX: 1805 – 1880	TX: 1850 – 1910 RX: 1930 – 1990
Duplex spacing	45 MHz	45 MHz	95 MHz	80 MHz
Channel Spacing	200kHz			
Number of channels	124 Carriers x 8 (TDMA)	175 Carriers x 8 (TDMA)	374 Carriers x 8 (TDMA)	299 Carriers x 8 (TDMA)
Modulation	GMSK 8-PSK			
Power Class GSM/GPRS; EGPRS MCS1-4 (GMSK)	Class 4		Class 1	
Power Class EGPRS MCS5-9 (8-PSK)	Class E2		Class E2	

4.9 Supported GSM Features

Attribute	Data
SIM Personalization Locks	Network
SIM Application Toolkit USIM Application Toolkit	Supported by AT commands (Release 99) Supported by AT commands (Release 99)
Speech Coding	Not applicable (C3607w does not support speech services)
SMS over GPRS	Mobile Originated and Mobile Terminated
Data Rates	Multislot class 10 supported (see table below) GPRS Coding Schemes: CS-1, CS-2, CS-3, CS-4

4.10　GPRS Maximum Data Rates

Coding Scheme	Data Rate per slot	4 + 1		3 + 2	
		Rx	Tx	Rx	Tx
CS-1	9.05	36.2	9.05	27.15	18.1
CS-2	13.4	53.6	13.4	40.2	26.8
CS-3	15.6	62.4	15.6	46.8	31.2
CS-4	21.4	85.6	21.4	64.2	42.8

Speed achieved depends on the Coding Scheme supported by the GSM Network. Data rate is the payload per slot, headers plus data.

4.11　EDGE Technical Data

Attribute	Data
Device Class	EDGE Class Multislot 10
Modulation Coding Schemes	MCS-1 to MCS-9
EDGE features	Link Adaptation Incremental Redundancy Extended Uplink TBF Network Assisted Cell Change (NACC)

4.12 EDGE Maximum Data Rates

Coding Scheme	Type of coding	Data Rate per slot	4 + 1		3 + 2	
			Rx	Tx	Rx	Tx
MCS-1	GMSK	10.60	42.40	10.60	31.80	21.20
MCS-2	GMSK	13.00	52.00	13.00	39.00	26.00
MCS-3	GMSK	16.60	66.40	16.60	49.80	33.20
MCS-4	GMSK	19.40	77.60	19.40	58.20	38.80
MCS-5	8-PSK	24.05	96.20	24.05	72.15	48.10
MCS-6	8-PSK	31.25	125.00	31.25	93.75	62.50
MCS-7	8-PSK	47.45	189.80	47.45	142.35	94.90
MCS-8	8-PSK	57.05	228.20	57.05	171.15	114.10
MCS-9	8-PSK	61.85	247.40	61.85	185.55	123.70

Speed achieved depends on the Coding Schemes supported by the GSM/EDGE Network. Data rate is the payload per slot (headers plus data).

4.13 SMS Technical Data

Attribute	Data
Concatenated SMS	Yes, up to 10 messages
Character set	7-bit, 8-bit, Unicode
SMS Cell Broadcast	Supported by AT Command

5 C3607w Hardware Overview

5.1 General

C3607w is a 28.8x34.0x2.36 mm 192-lead LGA package surface mounted component, see chapter 7 for Related Information and references. C3607w is an integrated solution using the host's antenna system and UICC reader.

It is designed as an add-in option for integrators of pad/tablet devices and ultra-portable personal computers. The product HW comprises of the following component parts:

1. HSPA and GSM wireless network adapter with system clock support for external GPS receiver.

2. Voltage regulation circuitry which converts power from the battery to the regulated voltage for the system's components.

3. Baseband circuitry, which provides the signal processing, control, and micro-processing of the system.

4. Onboard flash memory for autonomous operation.

All components are covered by EMC shields. All power, baseband communication and antenna signals are routed via the LGA pads of the module.

5.2 Dimensions

The dimensions of the card are given in the figure below.
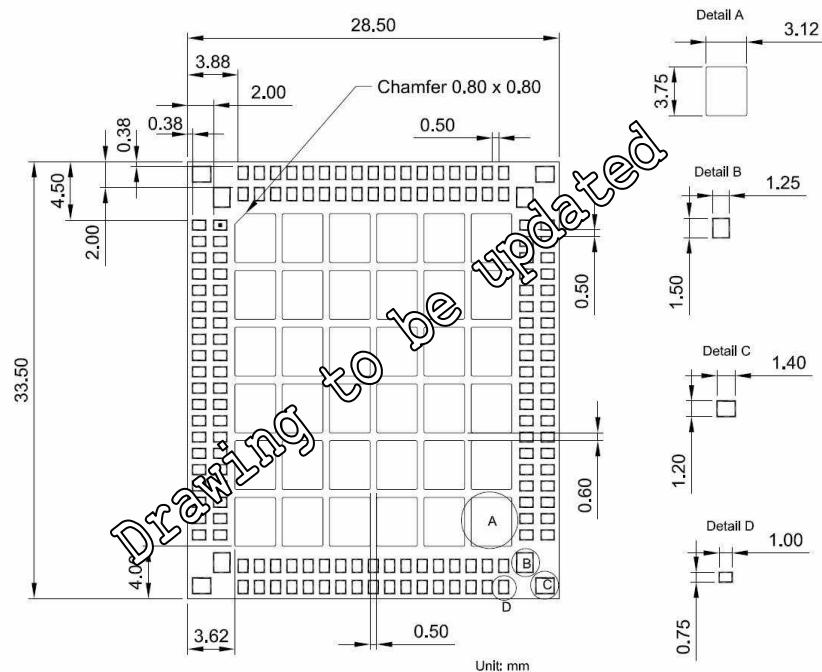
5.3 Functional Block Diagram

A function representation of C3607w Mini Card is included in the figure below.
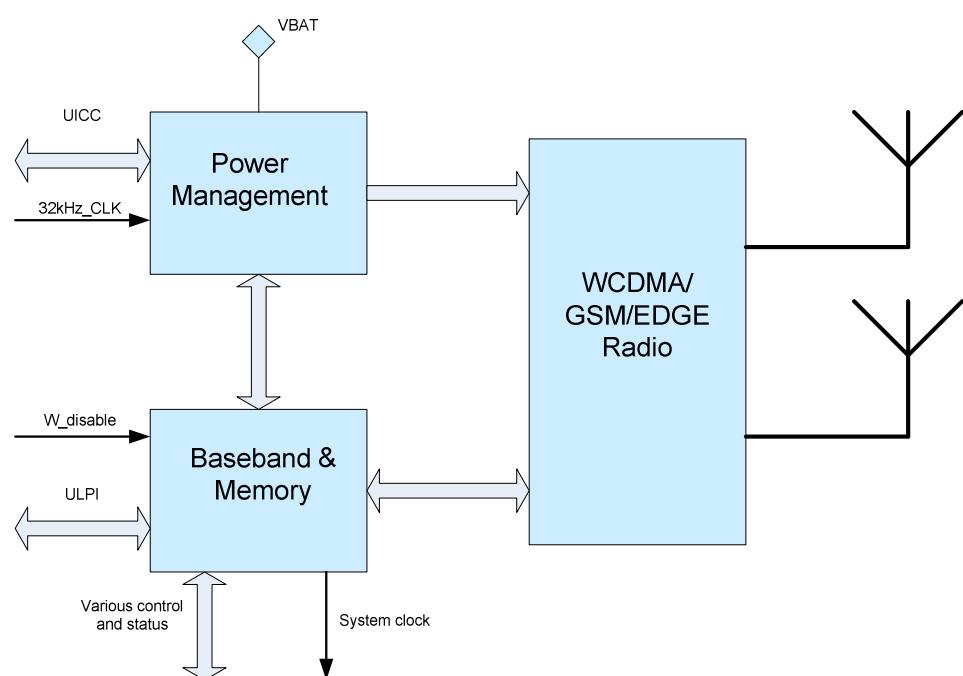
6 Host Software Overview

6.1 Windows host

Note: This section and its subsections are applicable on the generic module. Customization differences may occur.

The PC software architecture consists of drivers, a Windows service, APIs and two applications

- Wireless Manager (WM) to control the Mobile Broadband connection

- SMS application, used to send and receive text messages
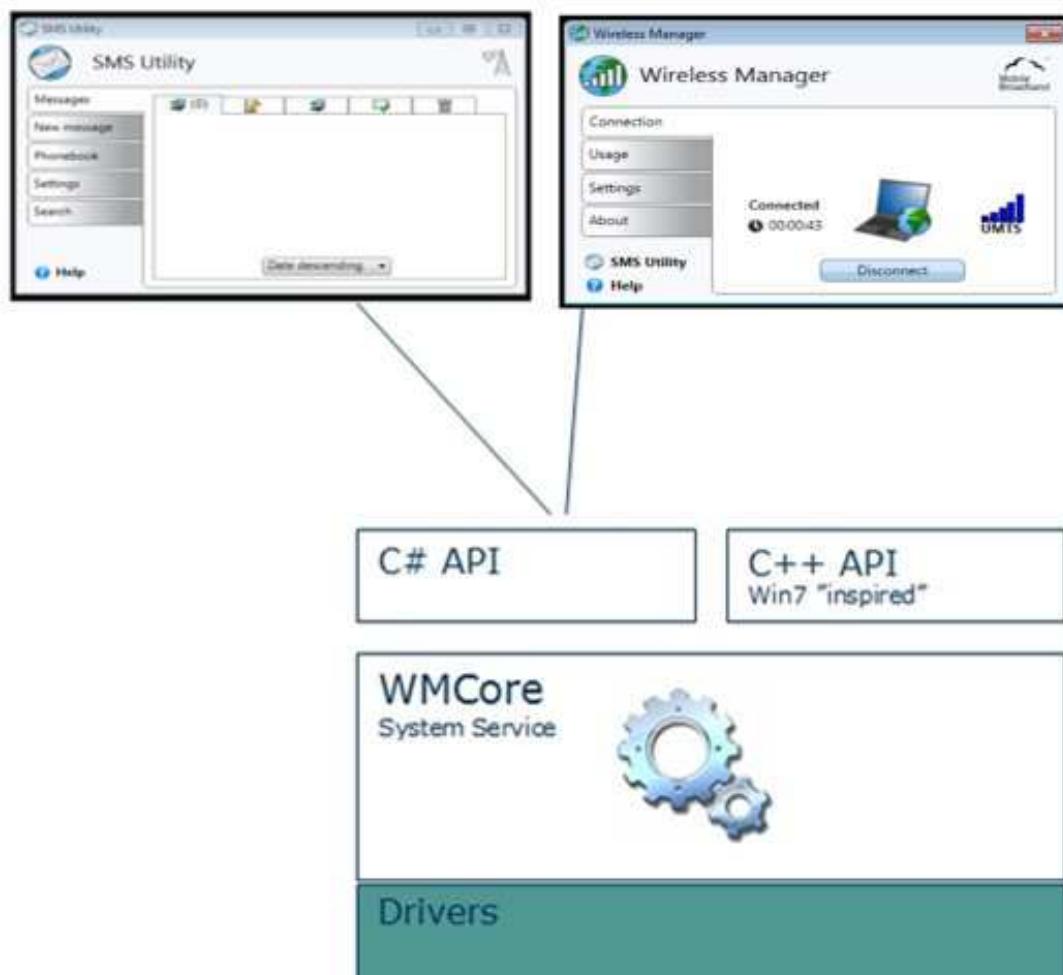
6.1.1 Installation Procedure

Installation follows normal Windows procedures. Microsoft .NET^{TM} 3.5 or later needs to be installed on the machine. If missing, a prompt will inform the user during the installation process to install the .NET Framework.

The installation can be done both in interactive and silent mode to enable installation without user interaction.

6.1.2 Wireless Manager

The Wireless Manager is accessed from the Windows Desktop or via **Start | Programs| Wireless Manager**. Preferences can be set to automatically switch the transmitter on and make a connection.

A Wireless Manager icon is placed in the Windows notification area at the bottom right of the screen. Set the "Minimize to notification area" option in Wireless Manager to show an icon in the Windows notification area if the Wireless Manager Status window is minimized (if C3607w is active).
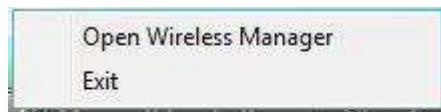
To open the Wireless Manager, right-click the Wireless Manager icon to access a menu and select "Open Wireless Manager". Select "Exit" to quit the Wireless Manager.

The Windows NDIS icon indicates an active connection and data flow. The total connection time and transmit and receive byte count is also shown in the Wireless Manager.

6.1.2.1 Status Display

Wireless Manager opens to a status window which provides network and connection information.

The network operator's and notebook manufacturer's logos can be customized in the application. Connection duration, connection mode, volume of data and an indication of the signal strength are provided in the Wireless Manager window while connection is active. The figures provide an approximate checkpoint of the data volumes. Please note that the information shown here is not guaranteed to match the mobile operator's bill.

6.1.2.2 Settings

Settings are presented in logical groups. Connection settings are automatically set up each time a new SIM card is inserted in to C3607w. The Wireless Manager contains a list of many operator settings. The home operator on the SIM is matched with this list and a default connection profile is automatically created.

The settings may be viewed and edited. Alternative settings can be manually entered or selected from a database covering many mobile operators.

6.1.2.2.1 Connection Configuration

When a new SIM card is detected by C3607w, the Wireless Manager identifies the home network and automatically creates a connection profile from a pre-loaded list of operator settings. This becomes the default profile and is available immediately. Therefore, the user does not need to do anything, in most cases, except click the Connect button to establish a connection.

If the operator settings are not available or a personalized (company-specific) APN is in use, the information may be entered manually. Any number of profiles may be defined (including Access Point Name, Username and Password). Quality of Service parameters is set to "network default".

6.1.2.2.2 Connection Operation

No user interaction is required to set the speed of the connection. It will be automatically set by the network depending on available network resources and the user's subscription.

C3607w will automatically use the UMTS network by preference and automatically switch over to GPRS/EDGE where the operator has an integrated UMTS/GSM network if UMTS coverage is not available. When UMTS coverage returns, the connection will return to the UMTS network. In some networks, data flow must be paused. C3607w therefore needs to return to an idle state before a return to UMTS can take place. This is network-specific.

Similarly, if HSPA is available in the UMTS network, the higher download speeds will be automatically available. In some networks, it is not possible to detect HSPA until a connection is made.

6.1.2.2.3 IP Number Allocation

C3607w enables you to work within your corporate and/or ISP-assigned IP numbering scheme. It supports dynamic IP allocation. Dynamic IP allocation is normally used by both ISPs and corporate networks.

6.1.2.3 Help

The Wireless Manager has a built in help function. The help window is started by clicking on help in the main window, or by pressing function key F1.

6.1.3 SMS Utility

Text messages can be sent and received with the SMS Utility. Concatenation is supported, so messages longer than 160 (dependent on character coding) characters can be sent and received. The phonebook is an integrated part of the application and messages can be sent from a phonebook contact.
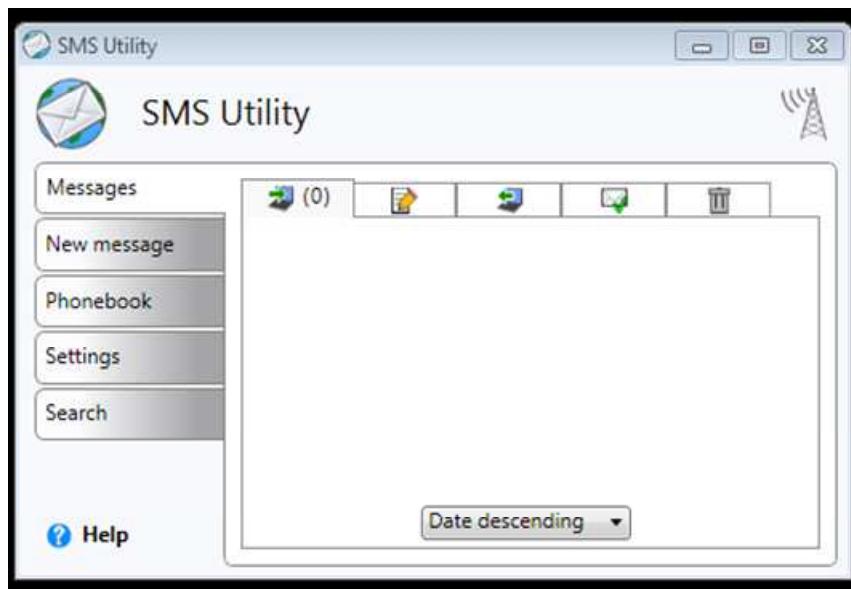
6.1.4 SDK

In addition to the AT-command interface, an Application Programming Interface (API) for C3607w is provided as part of the Software Development Kit (SDK) package. The API library is written in C++ and will provide third-party developers with a simplified interface to access device functionality.

The API is delivered as a Dynamic Link-Library (DLL), which exposes all necessary functionality to third party applications. The SDK package includes a detailed developer's guide, which covers all the exposed API functions with their descriptions, arguments, return values and code examples (where needed).

6.2 Linux (MeeGo) host software

6.2.1 Drivers

The USB drivers are open source and part of the Linux kernel.

The module firmware provides a WDM interface for device management and an ACM interface for control and data traffic. Upon start-up the drivers export TTY ports to the /dev directory. Three ACM and one WDM ports are exported. The IP traffic is routed to the network interface provided in the kernel, which belongs to the USB CDC class. The interface is based on the USBnet architecture.

6.2.2 Connection Manager

Within MeeGo there is a couple of open source projects dedicated to managing internet connections; oFono and Connman. Contact the MeeGo community for more detailed information.

6.3 Android host software

6.3.1 Drivers

The USB drivers are open source and part of the Linux kernel. See section 6.2.1.

6.3.2 Radio Interface Layer (RIL)

Android's Radio Interface Layer (RIL) provides an abstraction layer between Android telephony services and radio hardware. The RIL consists of two primary components:

- RIL Daemon: The RIL daemon initializes the Vendor RIL, processes all communication from Android telephony services, and dispatches calls to the Vendor RIL as solicited commands.

- Vendor RIL: The radio-specific Vendor RIL that processes all communication with radio hardware and dispatches calls to the RIL Daemon through unsolicited commands.

A vendor RIL that supports MBM devices has been implemented and is available on the Mobile Broadband Module support Wiki, see chapter 7.

7 Related Information and references

Web Site	Information
http://www.ericsson.com/mobilebroadbandmodules	Product information and information about mobile network infrastructure
http://www.gsmworld.com/	General information on GSM, GPRS and EDGE
http://www.umts-forum.org	General information on UMTS
http://sourceforge.net/apps/mediawiki/mbm/	GNU/Linux and Android support for Ericsson Mobile Broadband Modules

7.1 Documents Available

Product	Languages
AT Command Manual	English
Technical Description & User Guide	English
Integrator's Guide	English
Data Sheet C3607w	English
MBM Customer Cradle Manual	English

8 Operational and Regulatory information

Please read this information before using your Wireless Mobile Broadband Module.

8.1 Operational Information

8.1.1 Wireless Interoperability

The Wireless Mobile Broadband Module is designed to be interoperable with the specific wireless service providers and their roaming partners.

8.1.2 Safety

The Mobile Broadband Module, like other radio devices, emits radio frequency electromagnetic energy. The Mobile Broadband Module operates within the guidelines found in radio frequency safety and recommendations. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature. In some situations or environments, the use of the Mobile Broadband Module may be restricted by the proprietor of the building or responsible representatives of the applicable organization.

Examples of such situations include the following:

- Using the Mobile Broadband equipment on board airplanes, or

- Using the Mobile Broadband equipment in any other environment where the risk of interference with other devices or services is perceived or identified as being harmful.

If you are uncertain of the policy that applies to the use of wireless devices in a specific organization or environment (an airport, for example), you are encouraged to ask for authorization to use the Mobile Broadband device before you turn it on.

WARNING: Explosive Device Proximity Warning – Do not operate a portable transmitter (such as a wireless network device) near unshielded blasting caps or in an explosive environment unless the device has been modified to be qualified for such use.

CAUTION: Use on Aircraft – Regulations of the FCC and FAA prohibit airborne operation of radio-frequency wireless devices because their signals could interfere with critical aircraft instruments.

8.1.3 Recommendations

- Always treat your product with care and keep it in a clean and dust-free place.

- Do not expose your product to liquid, moisture or humidity.

- Do not expose your product to extreme high or low temperatures.

- Do not expose your product to open flames or lit tobacco products.

- Do not drop, throw or try to bend your product.

- Do not paint your product.

- Do not use your product near medical equipment without requesting permission from your treating physician or authorized medical staff.

- Do not use your product when in or around aircraft or in areas displaying a "turn off two-way radio" sign.

- Do not use your product in an area where a potentially explosive atmosphere exists.

- Do not place your product or install wireless equipment in the area above your car's airbag.

- Do not attempt to disassemble your product. Only authorized personnel should perform service.

8.1.4 Children

Do not allow children to play with your Mobile Broadband Module. They could hurt themselves or others, or could accidentally damage the Mobile Broadband Module. Your Mobile Broadband Module may contain small parts that could be detached and create a choking hazard.

8.1.5 Disposal of old electrical & electronic equipment

All electrical and electronic equipment included should not be treated as household waste. It should instead be left at the appropriate collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about the recycling of this product, please contact your local city office, your household waste disposal service or the store where you purchased your Mobile Broadband Module.

8.1.6 Emergency calls

This Mobile Broadband Modules do not support voice calls or voice services, nor emergency calls and should not be relied upon for essential communications.

8.2 Regulatory Information

The Mobile Broadband Module must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product The device manufacturer is not responsible for any radio or television interference caused by unauthorized modification of the devices included with the Mobile Broadband, or the substitution or attachment of connecting cables and equipment other than that specified by the device manufacturer.. The correction of interference caused by such unauthorized modification, substitution or attachment is the responsibility of the user. The device manufacturer and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from the user failing to comply with these guidelines.

8.2.1 United States, FCC Notices

FCC Radiation Exposure Statement:

CAUTION: The radiated output power of the Wireless Mobile Broadband Module is far below the FCC radio frequency exposure limits. Nevertheless, the Wireless Mobile Broadband Module should be used in such a manner that the potential for human contact during normal operation is minimized. Details of the authorized configurations can be found at **http://www.fcc.gov/oet/ea/fccid/** by entering the FCC ID number on the device.

CAUTION: This device has been evaluated for and shown compliant with the FCC RF exposure limits under portable exposure conditions (antennas are within 20 cm of a person's body) when installed in certain specific OEM configurations. This device has also been evaluated and shown compliant with the FCC RF Exposure limits under mobile exposure conditions (antennas are greater than 20cm from a person's body). Details of the authorized configurations can be found at **http://www.fcc.gov/oet/ea/fccid/** by entering the FCC ID number on the device.Interference Statement:

This device complies with Part 15 of the Federal Communications Commission (FCC) Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested to, and found to be within the acceptable limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates radio frequency energy and is designed for use in accordance with the manufacturer's user manual. However, there is no guarantee that interference will not occur in any particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna

Increase the separation between the equipment and the receiver

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected

Consult the dealer or an experienced radio/television technician for help

Note: This Mobile Broadband device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any other installation or use will violate FCC Part 15 regulations. Modifications not expressly approved by the device manufacturer could void your authority to operate the equipment.

8.2.2 European Union, EU Declaration of Conformity

European Union, R&TTE Compliance Statement

Bulgarian	С настоящето Ericsson AB декларира, че Mobile Broadband Module отговаря на съществените изисквания и другите приложими изисквания на Директива 1999/5/ЕС.

Czech	Ericsson AB tímto prohlašuje, že tento Mobile Broadband Module je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Danish	Undertegnede Ericsson AB erklærer herved, at følgende udstyr Mobile Broadband Module overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Dutch	Hierbij verklaart Ericsson AB dat het toestel Mobile Broadband Module in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
English	Hereby, Ericsson AB, declares that this Mobile Broadband Module is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Estonian	Käesolevaga kinnitab Ericsson AB seadme Mobile Broadband Module vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
German	Hiermit erklärt Ericsson AB, dass sich das Gerät Mobile Broadband Module in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Greek	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Ericsson AB ΔΗΛΩΝΕΙ ΟΤΙ Mobile Broadband Module ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Hungarian	Alulírott, Ericsson AB nyilatkozom, hogy a Mobile Broadband Module megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Finnish	Ericsson AB vakuuttaa täten että Mobile Broadband Module tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
French	Par la présente Ericsson AB déclare que l'appareil Mobile Broadband Module est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Icelandic	Hér með lýsir Ericsson AB yfir því að Mobile Broadband Module er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC
Italian	Con la presente Ericsson AB dichiara che questo Mobile Broadband Module è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latvian	Ar šo Ericsson AB deklarē, ka Mobile Broadband Module atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lithuanian	Šiuo Ericsson AB deklaruoja, kad šis Mobile Broadband Module atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Maltese	Hawnhekk, Ericsson AB, jiddikjara li dan Mobile Broadband Module jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.

Norwegian	Ericsson AB erklærer herved at utstyret Mobile Broadband Module er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.
Polish	Niniejszym Ericsson AB oświadcza, że Mobile Broadband Module jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC
Portuguese	Ericsson AB declara que este Mobile Broadband Module está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovak	Ericsson AB týmto vyhlasuje, že Mobile Broadband Module spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Slovenian	Ericsson AB izjavlja, da je ta Mobile Broadband Module v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Spanish	Por medio de la presente Ericsson AB declara que el Mobile Broadband Module cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Swedish	Härmed intygar Ericsson AB att denna Mobile Broadband Module står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

9 Environmental Declaration

Ericsson has a responsibility to the community to provide products which are safe to use and which have minimal impact upon the environment. Ericsson's Design for Environment program is designed to meet legislative and market requirements in the countries where Ericsson sell C3607w.

Ericsson's Design for Environment program lists chemical substances that are banned or restricted for use in Ericsson's products and manufacturing operations. Ericsson works with its suppliers to eliminate such substances in procured material.

Restrictions on the use of substances in Ericsson products are divided into two categories; banned substances and restricted substances.

Banned substances are prohibited for use in specified applications in Ericsson products in accordance with relevant legislation.

Restricted substances may only be used where no technically and/or economically acceptable alternatives exist and will be replaced as soon as possible.

The ban or restriction does not apply where the presence of a substance is unintentional and in the form very small concentrations derived from natural impurities.

Note: Legislation regulating the use of banned substances includes exemptions allowing limited use where no technically acceptable alternatives exist. Ericsson makes use of some of these exemptions in order to maintain product quality.

10 C3607w Material Declaration

Laboratory reports indicate the following content of substances on Ericsson's banned and restricted list in the C3607w product.

10.1 Banned Substances

Substance	Allowed C3607w
Cadmium	Not present
Mercury	Not present
Chromium (VI) compounds	Not present
Lead	0,001923 g*
Halogenated hydrocarbons PBB/PBDE	Not present
Organo-tin compounds	Not present

*This product is lead-free soldered but makes use of RoHS exemptions 5 & 7c

10.2 Restricted Substances

Substance	Allowed C3607w
Antimony	0,0000968 g
Beryllium	Not present
Bismuth	0,000094 g
Phthalates	Not present
Chlorinated polymers	Not present
Halogenated hydrocarbons (TBBE and other non-prohibited BFR's)	0 g

C3607w is RoHS (Restrictions on Hazardous Substances) compliant. A full report can be obtained from Ericsson upon request.

10.3 Disposal

C3607w is compliant with WEEE (Waste Electrical and Electronic Equipment Directive).

11   Terminology and Abbreviations

2G   Generic term for the second generation of cellular networks, when digital technology was used. GSM is a 2G network.

3G   Generic term for the third generation of cellular networks such as UMTS.

APN   Access Point Name. Used in GPRS to define services to which the terminal can connect, for example, Internet, WAP, MyCompany.

bps   Bits per second – rate of data flow.

CS   Circuit Switched. Connection from A to B which has a fixed bandwidth and is maintained over a period of time, for example a voice telephone call.

CS-1 to CS-4   Coding Scheme. Determines the data rate per timeslot in GPRS.

E-GPRS   Enhanced GPRS. A GPRS network enhanced with EDGE technology to provide greater speed and capacity.

EGSM   Extended GSM. New frequencies specified by the European Radio Communications Committee (ERC) for GSM use when additional spectrum is needed (Network-dependent). It allows operators to transmit and receive just outside GSM's core 900 frequency band. This extension gives increased network capability.

EAP   Extensible Authentication Protocol.

EDGE   Enhanced Data Rates for Global Evolution. Technology which improves the throughput of a GPRS network by a factor of 3.

GMSK   Gaussian Minimum Shift Keying. A method of modulating data, used in GPRS and EDGE.

GPRS   General Packet Radio Services.

GPS   Global Positioning System.

GSM   Global System for Mobile Communications. GSM is the world's most widely-used digital mobile phone system. At the end of Jan 2004 there were over one billion GSM subscribers across more than 205 countries.

GSM850	GSM network operating in the 850MHz band. Used in the USA.
GSM 900	GSM network operating in the 900MHz band. Used mainly in Europe, Australia and South Africa.
GSM 1800	Also known as DCS 1800 or PCN. A GSM network operating in the 1800 MHz band. Used in Europe and Asia-Pacific.
GSM 1900	Also known as PCS. A GSM network operating in the 1900MHz band. Used in the USA and Canada.
HSPA	High Speed Packet Access.
HSDPA	High Speed Downlink Packet Access.
HSUPA	High Speed Uplink Packet Access.
ISP	Internet Service Provider.
kbps	Kilobits per second – rate of data flow.
LAN	Local Area Network
LGA	Land Grid Array
MCS	Modulation Coding Scheme. MCS-1 to MCS-9 are used in EDGE.
NACC	Network Assisted Cell Change. Feature which reduces the time taken to perform a cell reselection.
NDIS	Network Driver Interface Specification. A Windows Device Driver specification, used for Ethernet cards, ISDN Adaptors and GPRS WAN adaptors.
PC	Personal Computer.
PCS	Personal Communications Services, often used to describe GSM1900 networks.
PDP	Packet Data Protocol.
Phone book	A memory in the SIM card where phone numbers can be stored and accessed by name or position.
RoHS	Restriction of use of certain Hazardous Substances.
Rx	Receive.
SDK	Software Developer's Kit.

Service Provider	A company that provides services and subscriptions to mobile services (phones, mobile broadband, etc.).
SIM card	Subscriber Identity Module card – a card that must be inserted in any GSM-based mobile terminal. It contains subscriber details, security information and memory for a personal directory of numbers. The card can be a small plug-in type or credit card-sized, but both types have the same functions.
SMS	Short Message Service. Allows messages of up to 160 characters to be sent and received via the network operator's message center to a mobile phone.
TBD	To be defined.
TBF	Temporary Block Flow.
TCP/IP	Transmission Control Protocol/Internet Protocol.
TCP/IPv4	TCP/IP Version 4. Most widely implemented form of TCP/IP today having a 4 byte address format such as 212.161.127.136.
TE	Terminal Equipment. Generic term for GSM terminals such as phones and Mobile Broadband Modules.
TLS	Transport Layer Security. Used, for example, by Web browsers
Tx	Transmit.
UICC	UMTS Integrated Circuit Card.
UMTS	Universal Mobile Telecommunications System. 3G network technology using WCDMA methods.
USIM	UMTS Subscriber Identity Module.
VPN	Virtual Private Network.
WAP	Wireless Application Protocol. A global standard specified in order to make Internet services available for mobile users.
WCDMA	Wideband Code Division Multiple Access. A modulation technique using a wide bandwidth (5MHz in the case of UMTS). All terminals transmit in the entire bandwidth and the signals from each are differentiated via the use of unique codes assigned to each transmission.
WEEE	Waste Electrical and Electronic Equipment Directive.

WWW   World Wide Web.